

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re application of

Woo Sup SHIN, et al.

Serial No.: **09/039,438**

Filed: **March 16, 1998**

For: **Etching Apparatus**



Group Art Unit: **1763**

Examiner: **A. Powell**

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REQUEST FOR RECONSIDERATION

Assistant Commissioner of Patents
Washington, D.C. 20231

Sir:

In response to the Office Action dated August 29, 2000, Applicants respectfully submit the following remarks:

REMARKS

In the Office Action dated August 29, 2000, the Examiner rejected claims 1 and 19-20 as being unpatentable over Nelson in view of Chung, rejected claims 2, 7 and 10 as being unpatentable over Nelson in view of Chung and Title, rejected claims 3-6, 8-9 and 11-18 as being unpatentable over Nelson in view of Chung, Jones and Title.

Applicants respectfully traverse the rejection of claims 1, 19, and 20 under 35 U.S.C. § 103(a) as being unpatentable over Nelson in view of Chung and reconsideration is requested.

As Applicants noted in the Amendment filed July 6, 2000, Nelson fails to show an etch bath having a bubble plate.

Claim 1 and its dependent claims 19 and 20, each recite *inter alia* the following elements:

an etch bath having a bubble plate, and

a glass substrate etched to reduce a thickness of the glass substrate.

Nelson neither shows nor teaches an etch bath, a bubble plate, etching a glass substrate, etching to reduce a thickness of a substrate, or any combination of these elements in claims 1, 11, 19, and 20. Applicants refer to the Remarks contained in the Amendment dated July 6, 2000 for further discussion of the sprayer etcher of Nelson.

Moreover, Nelson specifically discloses that “[t]he invention relates to chemical etching of material, often from a substrate . . .” Nelson, col. 1, lines 9 - 11 (emphasis added). It is clear from Nelson that the invention described therein is for removing materials that have been applied to the substrate, not for thinning the substrate by etching. Nowhere does Nelson disclose or even imply the etching of a substrate itself, and as such, it cannot be said to anticipate an apparatus that reduces a thickness of a substrate by etching. Nelson does not teach or suggest etching of any material--substrate or other--by immersing the material in an etch bath.

The Examiner cites Chung as disclosing the elements not taught by Nelson.

Chung specifically discloses that “[t]his invention relates to semiconductor cleaning and, more particularly, to semiconductor cleaning through agitation of a reagent chemical in an acid solution.” It is clear from Chung that the invention described therein is for cleaning a semiconductor wafer, *i.e.*, “the removal of impurities from the surfaces of [semiconductor] wafers.” Col. 2, lines 1-2.

Applicants respectfully submit that there is no motivation or suggestion in the references to suggest to one of ordinary skill in the art to combine Nelson and Chung in a manner that would render the claims obvious in view of Nelson and Chung.

To establish a *prima facie* case of obviousness, it must first be shown that there is some suggestion or motivation to combine the references cited, either in the references themselves, or in the knowledge generally available to one of ordinary skill in the art to

modify the reference or to combine the references teachings. MPEP 2143.

The Office Action dated August 29, 2000 states at page 3

"At the time of the invention it would have been obvious to a person of ordinary skill in the art to replace the spray etcher of Nelson with the etch bath and bubble plate of Chung et al."

The motivation for doing so would have been to etch substrates by spraying etchant onto substrates to immerse the substrates in said etchant within a tank while agitating the etchant with inert gas transmitted through a bubble plate in order to promote reaction and remove the substrate surfaces reacted impurities as taught by Chung et al." Office Action, Paper No. 20 at P. 3.

However, Applicants submit that this recitation of motivation fails to explain what specific scientific understanding or technological principle within the knowledge of one of ordinary skill in the art would have suggested the combination of Nelson and Chung.

Applicants respectfully suggest that one of ordinary skill in the art of chemical etching, as disclosed by Nelson, would not be motivated to look to the disclosure of Chung, which relates to cleaning of semiconductor wafers. Moreover, Applicants respectfully suggest that the motivation proposed by the present Office Action does not explain what scientific understanding within the knowledge of one of ordinary skill in the art would have suggested the combination of Nelson and Chung.

Therefore, Applicants respectfully request reconsideration of the claims rejected over the combination of Nelson and Chung.

In addition, and for similar reasons, Applicants respectfully traverse the rejection of claims 2, 7, and 10 under 35 U.S.C. § 103(a) as being unpatentable over Nelson in view of Chung in further view of Title. As discussed above, Nelson neither teaches nor suggests the following elements of the present invention as recited in independent claims 1 and 10:

an etch bath having a bubble plate, and

etching a glass substrate to reduce a thickness of the glass substrate.

The Office Action cites Chung and Tittle as teaching the elements not taught by Nelson. As discussed above, Applicants respectfully submit that there is no motivation or suggestion in the references to suggest to one of ordinary skill in the art to combine Nelson and Chung. Moreover, nothing in Tittle, which discloses only a chemical bath process control system, provides such motivation.

In addition, Applicants suggest that, because there is no motivation or suggestion to combine Nelson and Chung, there is no motivation or suggestion to consider Tittle in a manner that would render the claims obvious in view of Nelson, Chung and Tittle.

The Office Action dated August 29, 2000 states at page 4

"At the time of the invention it would have been obvious to a person of ordinary skill in the art to control the etching operation for the etching apparatus of Nelson with the chemical process control system of Tittle et al.

The motivation for doing so would have been to monitor, initiate corrective action and establish limits for the etching operation as taught by Tittle et al. (Claim 8)." Office Action, Paper No. 20 at P. 4.

However, Applicants submit that this recitation of motivation fails to explain what specific scientific understanding or technological principle within the knowledge of one of ordinary skill in the art would have suggested the combination of Nelson and Chung, as above. Moreover, this recitation of motivation fails to explain what specific scientific understanding or technological principle within the knowledge of one of ordinary skill in the art would have suggested the combination of Nelson, Chung, and Tittle.

Finally, claims 3 - 6, 8 - 9, and 11 - 18 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Nelson in view of Jones et al., and Tittle. Applicants respectfully traverse the rejection. Claims 3 - 6, 8 - 9, and 11 - 18 are allowable over the cited references in that these claims recite, in varying degrees of specificity, a combination of features

including an etching apparatus for etching a glass substrate comprising an etch bath having a bubble plate.

The Office Action cites Chung, Tittle, and Jones as teaching the elements lacking in Nelson. As discussed above, Applicants respectfully submit that there is no motivation or suggestion in the references to suggest to one of ordinary skill in the art to combine Nelson and Chung, or to consider Tittle in view of Nelson or Chung. Moreover, nothing in Jones, provides such motivation.

In addition, Applicants suggest that, because there is no motivation or suggestion to combine Nelson, Chung, and Tittle, there is no motivation or suggestion to consider Jones in a manner that would render the claims obvious in view of Nelson, Chung, Tittle, and Jones.

The Office Action dated August 29, 2000 states at page 5

“At the time of the invention it would have been obvious to a person of ordinary skill in the art to combine the multiple chambers for rinsing and drying of Jones et al with the etching apparatus of Nelson.

The motivation for doing so would have been to provide treating operations such as rinsing and drying of substrates as taught by Jones et al.” Office Action, Paper No. 20 at P. 5.

Applicants respectfully submit that this recitation of motivation fails to explain what specific scientific understanding or technological principle within the knowledge of one of ordinary skill in the art would have suggested the combination of Nelson and Chung, or the combination of Nelson, Chung, and Tittle, as above. Moreover, this recitation of motivation fails to explain what specific scientific understanding or technological principle within the knowledge of one of ordinary skill in the art would have suggested the combination of Nelson, Chung, Tittle, and Jones.

In view of the foregoing Remarks, Applicants respectfully submit that the application is in condition for allowance and early, favorable action is respectfully solicited.

Page 6

If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is requested to call the undersigned attorney at (202) 624-1200 to discuss the steps necessary for placing the application in condition for allowance. All correspondence should continue to be sent to the below-listed address.

If these papers are not considered timely filed by the Patent and Trademark Office, then a petition is hereby made under 37 C.F.R. §1.136, and any additional fees required under 37 C.F.R. §1.136 for any necessary extension of time, or any other fees required to complete the filing of this response, may be charged to Deposit Account No. 50-0911. Please credit any overpayment to deposit Account No. 50-0911. A duplicate copy of this sheet is enclosed.

Respectfully submitted,

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Page 6

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